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1160 W. Orange Grove Ave., Arcadia, California, U.S.A. 91006

BUTTERFLY AGGREGATIONS

WALFRIED J. REINTHAL

4026 Sequoyah Ave., Knoxville 19, Tenn.

PROBABLY A GOOD MANY COLLECTORS have, at one time or another, during their field trips seen butterflies accumulating, by the dozens and hundreds, in very small places. This is particularly true of the tropics.

Species belonging to certain families, particularly the Papilionids,, Pierids, Nymphalids, and Lycaenids are known to have this habitual tendency.

The habit to aggregate in large numbers has obviously developed from the feeding peculiarities of these insects. Feeding peculiarities, on the other hand, are greatly influenced by an irresistible attraction that certain odors impose on these butterflies. Very often it is just a natural dampness caused by rain or running water on roads, river banks, lakes, and sea shores, or other wet places that may attract these thirsty insects. Odors, sometimes very obnoxious to the human nose, caused by the decaying plants or animal bodies, human or animal excrement and urine, remnants of food, drinks, or of other materials, may attract butterflies in smaller or larger numbers.

In the following paragraphs I would like to report on a few cases drawn from my past experiences in the field.

PAPILIO GLAUCUS CANADENSIS IN ADIRONDACKS.

It was during a collecting trip in the Adirondacks, upper New York State, in June 1956 when this observation was made. The *Papilio glaucus canadensis* were out in large numbers. Only fresh males were flying and the very first females had just started to appear.

The shoulders of the dirt roads were actually swarming with these attractive yellow fliers, and particularly some of the dips on the road, where more moisture had accumulated, and also some damp roadside ditches seemed to attract the hungry insects.

On Schroon River Road, I drove on a gravel road running through a sparsely populated area and through a partially shady woods. At some distance from a small puddle in the middle of the road I stopped my car. My attention was attracted by a kind of activity on the damp gravel where some fifty males of *canadensis* were sitting side by side, all with wings closed, and enjoying the presence of moisture. I approached the spot as cautiously as possible, moving the last few feet on "all fours," fixed my camera at a distance of about two feet and took a few pictures. Not one specimen became disturbed. It was pleasantly quiet there without any movement in the air.

Next day I concentrated my attention on another dirt road leading from Indian Lake to Cedar River Flow. It was a nice warm day, June 17th, and the *canadensis* was again swarming along the sides of the road. I was looking for a larger aggregation of *canadensis* to get a few more pictures.

Smaller groups, consisting of about twenty to thirty specimens, were observed. Then, came what I was really looking for. On a dry gravel roadside, just about a foot or two from the very margin of the road, I noticed a large yellow spot. Low grass, sedges mostly, but no flowers, sparsely covered this roadside. It was on this yellow spot, measuring about one and a half feet in diameter, that I noticed about one hundred and twenty *canadensis* sitting, side by side, with wings closed. As I approached cautiously, a few flew away but I managed to take two pictures. Then I covered the spot with my eighteen inch collecting net. The entire aggregation flew up, and my large net was filled with frightened Papilionids. I started taking them out one by one, examining and counting the specimens, and afterwards giving them their freedom. Many escaped my counting but, nevertheless, I counted eighty-five in all. Without exception they were all fresh males, not a single female was among them. I examined the spot closely and concluded that either the presence of moisture or some curious odor was the reason for the aggregation.

PAPILIO GLAUCUS IN CATSKILLS.

One interesting observation comes from the Catskill Mountains in New York State. It occurred in July 1956. After collecting for half a day in the picturesque Big Indian Valley, I was approaching the end of the valley on a gravel road where it joins the highway. It was about three o'clock in the afternoon, and I was getting hungry.

Stopping my car under a shady birch, I was ready to open my lunch box when I saw a movement. It was in a dry pasture, and I had to climb a stone fence to get closer. What attracted me was fresh cow dung on which a large variety of butterflies were feeding. I covered the fresh brown mass trying not to smear my net. After I sorted the insects from my net there were about fifty *Papilio g. glaucus,* four *Limenitis arthemis,* and two *Limenitis a. astyanax.* This is a good example that the animal excrements sometimes attract a large number of certain butterflies. This time they were Papilionids and Nymphalids.

PAPILIONIDS IN THE SMOKIES.

Speaking of the Papilionids, another experience comes to my mind. Collecting in the Smoky Mountains of Tennessee on May 15th, 1960, there were many *philenor, troilus,* and *glaucus* flying in the afternoon along the gravel road in one of the canyons. The *philenor* outnumbered the other two, and there were very few *glaucus.* There seemed to be more specimens around the picnic places and on the sections of the road where water was dripping from the canyon walls. I had to descend to the river in order to wash my hands, and while walking down my attention was attracted to a small hole between the rocks. In the hole, which was no larger than eight inches in diameter, there were a dozen or more butterflies sitting. Most of them were quietly sucking, however, a few were moving around restlessly. I covered the hole with my net and caught all of them and examined them. There were: eight *glaucus,* three *troilus,* six *philenor,* three *Erynnis horatius,* and three *Epargyreus c. clarus* in this social company. There was very little moisture in the hole. I found four *glaucus* wings and what looked like the remnants of their decaying bodies. It was my impression that someone had stepped on a few *glaucus,* which were sucking on moisture, and that this was responsible for the hole. The possibility also exists that a reptile, like a lizard, partly consumed the *glaucus.*

I stepped down to the stream and continued my observation of the place for any further development. After awhile, a male *glaucus* was flying above the middle of the stream. As it approached me it veered sharply in the direction of the hole, where it landed with the velocity of a bullet. Another male *glaucus* repeated the same maneuver a few minutes later. No doubt, all

the above insects were attracted to the place by the odor of the decaying bodies of the dead butterflies, an odor not perceptible to the human nose but very much perciptible to the fine olfactory organs of these butterflies.

This last incident reminds me of another day of collecting in the Adirondack Mountains of New York. After catching my first *glaucus canadensis* in the morning, I squeezed its body and discarded the specimen on the road. I remained at the same place to catch other *glaucus* that were flying by. I collected about twenty males in one hour, either sitting on or flying around the dead specimen. It was amazing to see even other specimens, which were flying by on the opposite side of the road, suddenly crossing the road to land on or near the dead specimen. In this case again, there was no doubt that it was not the yellow coloration of the dead specimen that attracted the males so persistently but the odor of the dead body. I repeated this procedure in the afternoon but it seemed to work only in the forenoon and only with freshly squeezed specimens. When a dozen males, which were squeezed in the morning and dried during the day, were placed in the same area early next day these bodies did not attract any butterflies.

HAIRSTREAKS.

These are another group of butterflies which occasionally tend to aggregate in one place particularly preferable to them from the standpoint of feeding. I have had several cases where I encountered large numbers of one or more species of *Strymon* sitting on one large flowering plant. These are my observations.

On a trip through the Oklahoma Panhandle to New Mexico several stops were made along the highway in Dewey County, south of Seiling, Oklahoma. In those places the large yellow spots on the roadsides indicated the presence of one of the most desirable plants, Butterfly Milkweed (*Ascelepias tuberosa*), to hairstreaks and to many other diurnals. It was in June 1952, and the plant was in full bloom.

I approached one yellow cushion, about two feet in diameter, and I noticed that it was so densely covered with *Strymon* that there was hardly a place for additional ones. An estimation was made that there were more than two hundred specimens on that plant. From one corner of the plant I was able to gather the following: Ten males of *Strymon titus mopsus,* twenty-nine males and two females of *Strymon ontario autolycus,* and twelve

specimens of *Strymon f. falacer,* all together, fifty-three hairstreaks. A more careful study of other similar plants in that area disclosed that *titus mopsus* made up about twenty percent of the entire number of specimens sitting on one plant. The rest being about equally divided between the other two *Strymon,* namely the *falacer* and *ontario autolycus.* Besides the hairstreaks there were a few *Melitaea i. ismeria* and a few Hesperids. It also should be pointed out that the *titus mopsus* specimens were all fresh, *ontario autolycus* very fresh to fresh, and those of *falacer* fresh to worn.

Four days later, while returning the same way, a stop was made at the described place of the Butterfly Milkweed and the entire picture repeated itself. Same species of hairstreaks were collected on the plant, except that they were not as fresh this time. Besides the *Strymon,* there were a few *Nathalis iole* and *Vanessa cardui.*

In similar surroundings I had a commensurate experience in April 1953 on a highway four miles west of Mineral Wells, Palo Pinto County, Texas. The flowering Butterfly Milkweed plants on the roadside were covered with hairstreaks. I chose one of the more spectacular plants and after covering it with my net I had it full of *Strymon.* Some four or five dozen were collected. These made a small compromised part of all that were feeding on the plant. Unfortunately, I was not immediately cognizant of what species these *Strymon* represented. After it was checked at home, it turned out to be *ontario autolycus,* a species having its main distribution in Oklahoma and Texas, and in parts of some adjacent states. These are quite desirable to collectors. There were only single specimens observed on plants other than Butterfly Milkweed in that area. Only a few were collected while flying in a nearby oak thicket. The next year I returned to the same place to get more of the species. Unfortunately, the entire area, including that plant life, was changed because of the construction of a new road.

The third case of a mass occurrence of *Strymon* was observed in a different biotype involving another kind of plant. This time it was in June 1958 in Boiling Springs State Park, Woodward County, Oklahoma. The species involved was *Strymon a. alcestis,* and the plant that attracted this species was the Hemp Dogbane (*Apocynum cannabinum*). The plant was in full bloom at that time. The weather was very hot and humid: 105 degrees; with about 80% relative humidity. At this particular time of the year the above mentioned temperature and humidity are not unusual

for this part of the country. Following a female *Asterocampa antonia* in a small forest glade not far from the Park spring I discovered a dense growth of Hemp Dogbane. On almost every plant several *Strymon* were feeding or flying from blossom to blossom. I collected several *alcestis* males, partly worn, and females, nearly fresh. Besides *alcestis* there were only a few other butterflies present. Namely, *Strymon cecrops* and *Atalopedes campestris.*

The most recent observation involving one of our most common Lycaenids, *Celastrina a. pseudargiolus,* was made in March 1961 in the Great Smoky Mountains National Park. In two different canyons, one on the Tennessee and the other on the North Carolina side of the Park, this species, which had been very plentiful that year in the Smokies, was seen aggregating in groups of fifty to three hundred specimens. These groups were found accumulating in spots on the gravel roads.

What exactly attracted the "blues" in such numbers can only be guessed at. Possibly remnants of food or drinks left by picnickers, or it could have been gasoline from a leaky car. Anyway, the "blues" were so absorbed in their activities that one could almost step on them without disturbing them. In one place a few other species were associating with the "blues," but only as single specimens. Namely, *Papilio g. glaucus, Graphium marcellus,* and *Erynnis juvenalis.*

SKIPPERS.

Hesperids seldom tend to accumulate in one place in great numbers, but there are exceptions. I have seen *Erynnis,* sucking by the dozens, on damp spots on the roads, particularly in the morning and forenoon. But what I observed in April 1960 at Fall Creek Falls State Park, Tennessee, was something unusual. The fresh males of *juvenalis* were plentiful on the Park roads, particularly on road bifurcations and in parking areas.

When I came to a camping area reserved for organized groups, where a number of cabins and a larger building with a kitchen were occupied by some biology students, I observed the following: around the mess hall, where some food was being cooked, swarms of *Erynnis juvenalis,* estimated at about two hundred, were flying around the damp foundation of the building. They were on both the shaded and the sunny sides of the building. Whether or not it was the foundation dampness or some kitchen odor which attracted them I do not know. I lean toward the interpretation that the dampness and the peculiar odor of the

foundation was the main attraction. A dozen specimens could be netted at one sweep. All of them were fresh males and in a large majority belonged to *juvenalis*. Only two fresh *Erynnis persius* males and a few *Erynnis brizo* males were among them.

Another time, the following observation was made on a gravel road in the Smokies of Tennessee, May 1960. After leaving my car on a stream bank, I saw accumulations of *Erynnis icelus* in spots no larger than a foot wide. I tried to count the specimens aggregated in one of these places. There were twenty to thirty *icelus* sitting close together in one spot, no wider than three or four inches, and seemingly feeding on something. A closer examination did not reveal anything in particular which could have attracted the skippers. There was no dampness present. The gravel was entirely dry. But, people had been eating in this area, and possibly some spilled juice, Coca-Cola, beer, or remnant of food dropped in this place were attracting the insects.

LIBYTHEANA IN RIO GRANDE.

Libytheana bachmanii is a species that one usually catches just a few specimens at a time in places where the Hackberry, its food plant, grows. Seldom does one see large numbers of this species in one place.

In October 1951 while on a highway three miles east of Laredo, Texas, I tried to catch a few fresh *Kricogonia lyside* that were flying around in large numbers and I stepped into swarms of *bachmanii*. All the grass along the roadside and in the shallow ditch, mostly on the south side of the road, was covered with fresh specimens. There was a very light southerly breeze present.

My first impression was that the butterflies were migrating. But the specimens seemed to be very fresh, as if they had just emerged, and not flying around or going in any one direction. They seemed to be disturbed only by my footsteps in the grass. It seemed that in some spots there were more of them congregated, and stepping into those spots, I caused thirty to forty specimens to fly around for a short while and then settle down again in the grass. At times, when the breeze got stronger, swarms of *bachmanii* flew across the road in a northerly direction. Perhaps it was a migration, and the butterflies were resting there from the previous day's flight. This mass occurrence of *Libytheana* continued for miles and miles with changing density and there were millions of specimens along the highway.

I moved farther east as the daytime advanced. The southerly breeze increased, and swarms crossing the road containel a large number of *Kricogonia* and single specimens of fresh *Phoebis agarithe maxima.* Mass occurrence of *bachmanii* continued throughout that day, while I traveled a distance of about ninety miles toward Rio Grande City. Of course, they were a nuisance to my collecting! The next day, as I continued my way toward McAllen, there were still a large number of specimens flying around but not the swarms of the previous day.

Was this a migration from Mexico or just an unusual mass occurrence of this species that year along the Rio Grande? I do not know.

NYMPHALIDS IN COLORADO.

I have seen large numbers of Nymphalids, *Limenitis archippus watsoni, L. arthemis astyanax, Anaea andria, Asterocampa celtis, A. clyton, A. texana,* and *A. antonia* in Oklahoma and Texas gathering on fallen rotten fruit, particularly decaying peaches and pears. The fig orchards in Louisiana, for instance, are a good place to collect Nymphalids like *Polygonia* and *Asterocampa.*

The following observation was made on different butterfly species and on different bait during a collecting trip in July 1949 in Walnut Gulch, in Gunnison County, Colorado at an elevation of about 9000 feet.

Pursuing the interesting *Euphydryas maria alena* in that narrow gulch, I noticed a small aggregation of some twenty butterflies, *Melitaeini* and *Lycaenini,* sucking on a small amount of black excrement of an undetermined origin. When I returned five days later, after it had rained several times, my attention was again drawn to the above mentioned spot. I was fortunate enough to get most of the butterflies I found sitting on the same bait. The ones I collected consisted of: *Melitaea palla calydon, Phyciodes camillus, P. tharos pascoensis,* and *Lycaena amyntula,* with single specimens of *Thorybes nevada* and *Erynnis persius fredericki* among them.

The bait was kept under observation for thirty minutes, and the same species kept coming and alighting on the excrement. Other species were flying at the same time along the dirt road and around the same spot but none of them seemed to be interested in the bait. These species were *Papilio rutulus, P. bairdi brucei, Colias alexandra, C. scudderi, Pieris napi macdunnoughi,* and *Oeneis uhleri reinthali.*

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